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Application No.: 10/540,618 Docket No.: FHW-142US

AMENDMENTS TO THE CLAIMS

1. (currently amended) An optical coupler comprising an input waveguide, an intermediate waveguide, an output waveguide, a first grating situated between the input and intermediate waveguides, and a second grating situated between the intermediate and output waveguides such that, in use, light propagating in the input waveguide is coupled into the intermediate waveguide with the assistance of the first grating, and then is coupled into the output waveguide with the assistance of the second grating, wherein the intermediate waveguide has a higher refractive index than the input waveguide and a lower refractive index than the output waveguide.

2. (previously presented) A coupler according to claim 1, further comprising only two said gratings.

3. (previously presented) A coupler according to claim 1, which is a directional coupler.

4. (previously presented) A coupler according to claim 1, wherein the input and output waveguides have differing refractive indices.

5. (previously presented) A coupler according to claim 1, wherein the input and output waveguides have at least one differing transverse dimension.

6. (previously presented) A coupler according to claim 1, wherein the intermediate waveguide has a different refractive index to that of the input waveguide, or the output waveguide, or both.

7. (canceled)

8. (previously presented) A coupler according to claim 1, wherein the intermediate waveguide has at least one different transverse dimension to that of the input waveguide, or the output waveguide, or both.

9. (previously presented) A coupler according to claim 1, further comprising a first transitional layer situated between the input waveguide and the intermediate waveguide.

10. (previously presented) A coupler according to claim 1, further comprising a transitional layer situated between the output waveguide and the intermediate waveguide.

11. (previously presented) A coupler according to claim 1, wherein the first and second gratings have differing periods, or lengths, or depths, or profiles, or duty cycles, or any combination thereof.

12. (previously presented) A coupler according to claim 1, comprising a layered structure, in which each waveguide, grating or transitional layer comprises a respective layer or part thereof, of the structure.

13. (currently amended) A coupler according to claim 12, the layered structure comprises one or more layers of semiconductor material, or dielectric material, or both.

14. (currently amended) A coupler according to claim 13, wherein the layered structure comprises one or more layers of semiconductor material, wherein the semiconductor material comprises one or more of: silicon or related compounds; gallium arsenide or related compounds; indium phosphide or related compounds; or lithium niobate or related compounds.

15. (currently amended) A coupler according to claim 13, wherein the layered structure comprises one or more layers of dielectric material, wherein the dielectric material ~~comprises a~~ is glass.

16. (previously presented) A coupler according to claim 1, wherein the waveguides comprise rib waveguides, or planar waveguides, or strip waveguides, or embedded waveguides, or any combination thereof.

17. (previously presented) An integrated optical device comprising an optical coupler according to claim 1, wherein the input waveguide or the output waveguide of the coupler comprises a semiconductor waveguide of the device.

18. (previously presented) A device according to claim 17, wherein the semiconductor waveguide of the device comprises a semiconductor laser of the device.

19. (previously presented) A device according to claim 17, wherein the semiconductor waveguide of the device comprises a photodiode of the device.

20. (previously presented) The use of an optical coupler or device according to claim 1, to couple light between an external first waveguide and the output waveguide of the coupler, via the input waveguide of the coupler.

21. (previously presented) The use according to claim 20, wherein the external first waveguide comprises an optical fibre.

22. (previously presented) A coupler according to claim 10, further comprising a second transitional layer disposed between the output waveguide and the intermediate waveguide.